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ABSTRACT

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EVIDENCE FOR FOOT STRUCTURE IN HAUSA

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Abstract: McCarthy and Prince (1986, 1990) have put forward the Prosodic Morphology Hypothesis to account for morphological processes (such as reduplication and truncation) that typically require that their output conform to a particular shape of template. This hypothesis claims that morphological templates are analyzable in terms of prosodic units.

In this paper I will show that Hausa nominal reduplication and nickname formation are best analyzed as involving the specification of a foot template. Thus, these two processes provide supporting evidence for McCarthy and Prince's Prosodic Morphology Hypothesis.

1. Introduction

McCarthy and Prince (1986, 1988 and 1990) have observed that a variety of morphological processes in different languages require that their output conform to a particular shape of template. They refer to such phenomena as shape invariant morphology: The types of morphological processes that typically require the specification of a particular template include reduplication and truncation.

In reduplication, what reduplicates normally is specifiable by a specific template, and, in many truncation processes the output also conforms to a specific shape. In order to account for such morphological processes McCarthy and Prince (1986, 1988 and 1990) have put forward the **Prosodic Morphology Hypothesis.** This hypothesis claims that morphological templates are analyzable in terms of prosodic units which can be defined as a syllable (and various types of syllables, such as light syllable or heavy syllable).

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In this paper I show that Hausa has morphological processes that make use of an invariant foot template. I specially consider nominal reduplication and nickname formation and show that these are best analyzed as involving the specification of a foot template. Thus, these two processes provide supporting evidence for McCarthy and Prince's **Prosodic Morphology Hypothesis**.

This paper is organized as follows: Section 2 reviews previous account of Hausa nominal reduplication; section 3 presents the analysis of the same process within McCarthy and Prince's prosodic morphology framework; section 4 discusses the limitation of a CV-template account of the Hausa nominal reduplication; section 5 looks at other evidence besides reduplication for the role of foot in templatic morphology in Hausa, focusing on nickname formation; and section 6 presents the conclusion summarizing the results of my analysis.

2. Previous Studies on the Hausa Nominal Reduplication

This section deals with the analysis of a large class of a reduplicative nouns in Hausa, a Chadic language spoken in West Africa. In this language reduplication is of the inherent structure of the monomorphemic nouns presented in Newman (1986) as well as the class 2 nominal plurals discussed in Davis (1988).

The most intensive and insightful study of the process of reduplication has been provided by Newman (1986) and his subsequent research on the subject. But prior to Newman's account of reduplicative nouns in Hausa was Gouffé's (1975) analysis of the reduplication process in the language. Davis (1988) also provided an analysis of Hausa reduplicative nouns within Marantz (1982) framework. Three proposals quite divergent from one another emerged from the tree studies.

Gouffé suggested that the Hausa nominal reduplication involves in some cases prefixation of the CVC-sequence --a copy of the initial string of the base -- to the base and in other case reduplication of the last consonant of the base and the initial vowel and consonant of a plural suffix. In (1) an example of the stem initial CVC reduplication for deriving nominal plural is illustrated with the word *KaRfii*, whose plural is *KaRKaRfaa*, and in (2) the stem final consonant /k/ and **-un-** from the plural suffix are reduplicated between the nominal stem and the plural suffix for deriving *jakunkunaa* from *jakaa*.

(1)	KaRf-ii	'strength'	-->	*KàR-KaRf-aa
			-->	KaK-KaRf-aa
				'strengthening
(2)	jak-aa	'bag'	-->	jak-un-k-unaa 'bags'
	hak-ii	'grass'	-->	*hak-uw-k-uwaa -->
				hak-uu-k-uwaa 'grasses'

Though Newman has given credit to Gouffé for having provided an extensive and accurate description of the general process of reduplication in Hausa, he also criticized Gouffé's work for having failed to make some generalization about the reduplication process involved. Furthermore, Newman argues against CVC-prefix of reduplication postulated by Gouffé's for nominals, and suggests that synchronically what reduplicates in Hausa reduplicated nouns is disyllabic suffix which is a copy of the two rightmost syllables of the root. Following the affixation directionality postulated in Wilbur (1973) and Marantz (1982) Newman argues that the suffixation of the reduplicative affix to the stem directionality is from right-to-left, as illustrated below:

(3) *biri + Copy 2$ --> biri-biri --> birbirii
'fruit pigeon'

daaguraa + Copy 2$ --> daaguraa-guraa --> daagurguraa
'pl. act. gnawing'

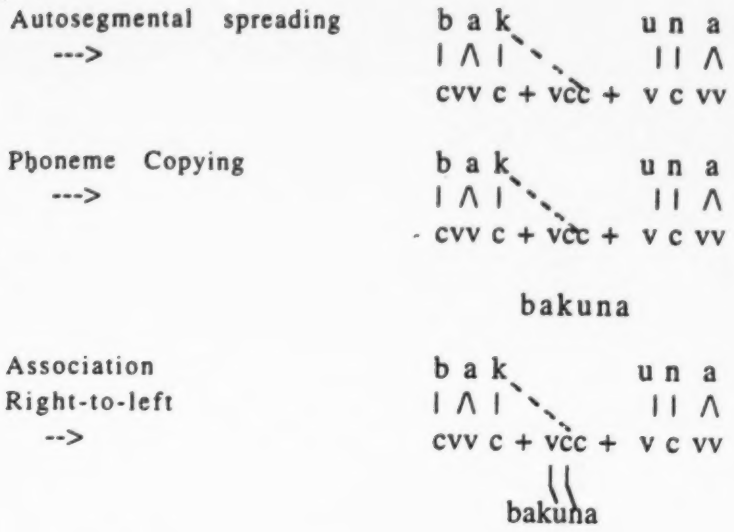
In (3) above, the vowel of *birbirii* 'fruit pigeon' is lengthened because synchronically Hausa has the tendency to lengthen nominal final vowels.

In Newman's proposal reduplication proceeds by reduplicating the last two full syllables of the stem and after that a regular rule of syncope applies to delete the stem-final vowel when it is in final position in the word.

Davis (1988) proposed an analysis of nominal plurals reduplication in Hausa in Marantz's CV-template approach to reduplication. Davis argues that the Hausa reduplicative template is an interfix --a type of empty morpheme usually beginning with a vowel followed by one or two consonant (i.e, a rhyme plus an onset) which does not add new meaning to the word and which is inserted between the (nominal) stem and the (plural) suffix. In Marantz framework reduplication is viewed as a normal affixation process whereby a phonemic empty reduplicative CV-template is specified as an affix and it acquires its melodic content from the stem through a phoneme copying process. The phonemes then associate one-to-one to the CV-template. The following example illustrates the account by Davis of the reduplication in which there is autosegmental spreading in addition to the phoneme copying process:

(4)

b a k u n a		b a k	u n a
| Λ | | | Λ	Interfixing	| Λ |	| | Λ
cvv c v c vv	-->	c vvc + vcc +	v c vv



(4) shows that [bakunkunaa] is derived from [baakunaa] by inserting the reduplicative interfix *-unk-* between the stem and the plural suffix *-unaa*. The interfix acquires its phonemic content by autosegmental spreading of the stem final consonant and copying of the phonemes of the plural suffix before the final vowel with a right-to-left association.

3. Hausa Nominal Reduplication: Analysis within McCarthy and Prince's Framework

In the following sections I analyze the set of data provided by Newman (1986) regarding the monomorphemic reduplicated nouns as well as the data on nominal reduplicative plural given in Davis (1988) within McCarthy and Prince's (1986, 1988 and 1990) theory of prosodic morphology. The main claim of McCarthy and Prince's theory regarding the reduplication process is that a reduplicative template is analyzable as some sort of invariant prosodic unit which must be structurally a licit prosodic constituent of the language under consideration. They posit that a prosodic constituent can either be a prosodic word (Wd) which is the minimal word in the language, a foot (F) which consists of up to two syllables; a light (monomoraic) syllable (μ) which is a syllable with a short

vowel; a heavy bimoraic (μμ) that is a syllable with a long vowel or ending with a consonant ; and a core syllable which is a light syllable in which only one consonant can precede the vowel. According to McCarthy and prince the reduplicative-template gains its melodic content by a process which will first copy the phonemic content of the stem and then associate one-to-one the copied phonemes to the prosodic template. The direction of the mapping is left-to-right for prefixation, right-to-left for suffixation, and variable for infixation. An example illustrating how the theory works is shown below for Mokilese in which progressive aspect reduplication involves prefixation of an invariant heavy syllable template. Consider the sample data below from the Mokilese language taken from McCarthy and Prince (1988: 21):

(5)	pOdok	pOd-pOdok	'plant'
	pa	paa-pa	'weave'
	di.ar	dii-di.ar	'find'
	caak	caa-caak	'ben'

(6) pOdok --> σ + σ σ σ + σ σ σ + σ σ

pO dok pOdok pO dok pOdok pO dok

a-/pOdok/ b-prefixation c-phoneme copying d-Association =[pOdpOdok]

(7) pa --> σ + σ σ + σ σ + σ

pa pa pa paa p a

a-/pa/ b-prefixation c-phoneme copying d-Association [paapa]

(8) di.ar --> σ + σσ σ + σσ σ + σσ
/| |\ /| |\ /|\ /| |\
d i a r diar di a r di i d ia r

a-/di.ar/ b-prefixation c-phoneme copying d-Association [diidiar]

(9) caak --> σ + σσ σ + σσ σ + σσ
/| |\ /| |\ /|\ /| |\
ca ak caak caak caa ca ak

a-/caak/ b-prefixation c-phoneme copying d-Association [caacak]

McCarthy and Prince (1986) show that the template of reduplication in Molikese is a bimoraic syllable (σμμ). In (7-8) they argue that in order for the reduplicative target to be satisfied --to be bimoraic -- the vowel of the first syllable of the word must be spread to link with the second mora of the prosodic affix as shown in (7d) and (8d). In addition, there are some requirements that the heavy syllable affix be either a CVC or a CV_1V_2 (where $V_1=V_2$). Thus the second vowel of the word di.ar cannot be a constituent of the syllabic prefix in Mokilese. (9) shows that a superheavy syllable cannot represent the syllabic prefix. Thus, the coda consonant of the stem, /k/, is not a constituent of the template affix.

Now that I briefly summarized McCarthy and Prince's approach to the reduplication process I turn next to its application to reduplicative processes in Hausa. I argue here that the target of the prosodic invariant affix in Hausa reduplicated nouns must be a foot. Furthermore, agreeing with Newman (1986) I claim that the reduplication process involves suffixation rather than prefixation or infixation of a foot-affix to the nominal stem. Phonemic melody association from the base to the affix is directionally from right-to-left (Marantz 1982). Finally, in my analysis the nominal stem to which reduplication applies includes the stem final vowel.

Data: The sample of data below for nominal reduplication in Hausa comes from Gouffé (1975), Newman (1986) and Davis (1988). (10) represents the set of data which Newman refers to as the synchronically frozen reduplicated nouns, and (11) the nominal plural reduplication discussed in Gouffé and Davis.

(10) Synchronically frozen reduplicated nouns (Newman 1986)

wárwáróo	'thin metal bracelet'
bílbílóo	'butterfly'
zánzánáa	'small pock marks'
túntúmíi	'sacre while ibis'
tántáaníi	'membrane'
bâlbéelàa	'cattle egret'
KyâKKéegàa	'lame excuse'
gáRgádáa	'mange of goat'
kwâRkwáasàa	'drive ant'
díddígíi	'investigation'
kúkkúBáa	'cracked cooking pot'
?àdíndínáa	'female grasshopper'

(11) Class 2 plurals (Gouffé 1975 and Davis 1988)

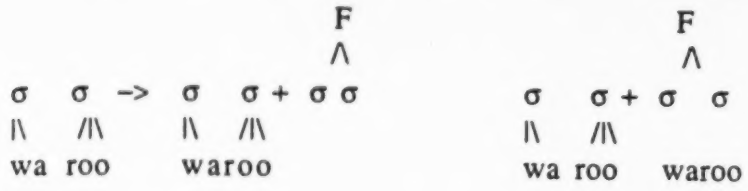
bàkúnkúnàa	'months'
tùdúndúnàa	'high ground'
jàkúnkúnàa	'bags'
bàtúttúkàa	'matter'
gàrúurúwàa	'towns

The above set of data seem to show two kinds of reduplication patterns in Hausa. While in (10) it seems that the pattern involves for the most part, the reduplication of a prefix which is the initial syllable of the (nominal) stem, in (11) the reduplicative affix looks like a heavy syllable infix.

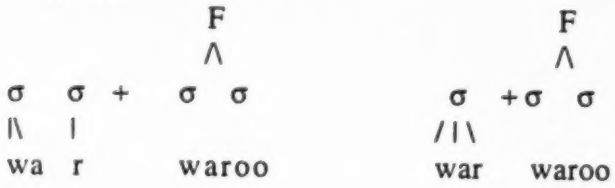
Analysis: A Prosodic Morphology Account: I argue that the apparent varied patterns of reduplication in Hausa shown in these two sets of data above can be captured by a single

generalization in McCarthy and Prince's prosodic morphology theory. The claim is what reduplicates in nominal reduplication in Hausa is a suffix whose prosodic target is a foot (σ σ). The copied phonemes are mapped right-to-left to the nominal stem as exemplified below:

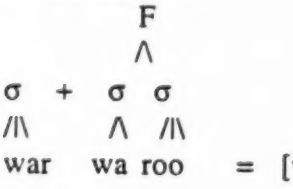
(12) a- base b- suffixation c- phoneme copying



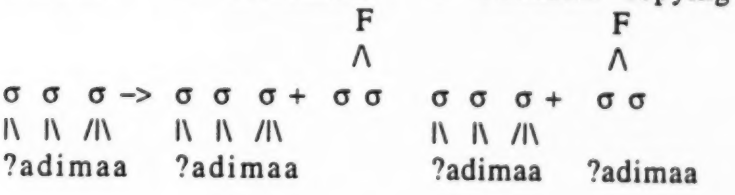
d-Stem final vowel deletion e- coda rule



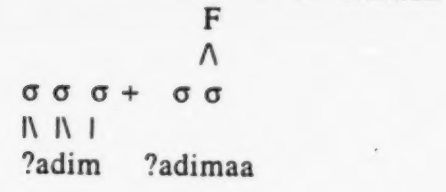
f- Association



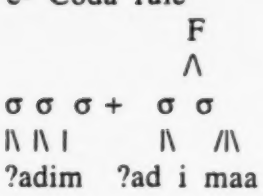
(13) a- Base b- Suffixation c- Phoneme copying



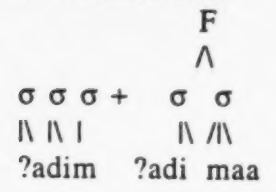
d- Stem final vowel deletion



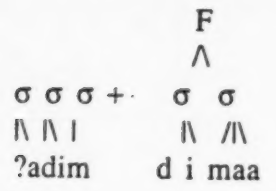
e- Coda rule



f- Association



f- Stray Erasure (Itô 1986): deletion of unassociated segments



h- Homorganic nasal assimilation

?àdímdímáa --> [?àdíndímáa]

The above derivations require some comments. In (12d) and (13d) I assume that the output of the stem final vowel deletion rule is subjected to Haye's (1989: 268) **Parasitic Delinking Principle** which he formulates as follows: 'Syllable structure is deleted when the syllable contains no overt nuclear segment.' The result of this principle is that when a vowel is deleted from a syllable node as in (12d) and (13d), the syllable node is automatically deleted as well. The stranded consonant is reassociated leftward to a preceding syllable as coda. It is the syllabification of the stranded consonant into a coda position I refer to as coda rule in the derivation.

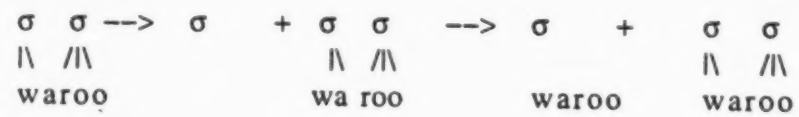
Following Itô (1986), I assume in (13g) the application of the **Stray Erasure Principle** which requires the deletion of unassociated segments throughout the derivation process. Thus, in (13g) the base initial syllable must be erased because it is not incorporated in the foot affix. Finally I adopt the view that there is no fixed ordering between phonological rules and morphological processes. Some phonological rules may apply before morphological rules and vice-versa.

To sum up, we see that McCarthy and Prince's framework offers a straightforward account of nominal reduplication in Hausa that involves a suffixation of a foot template to the nominal stem.

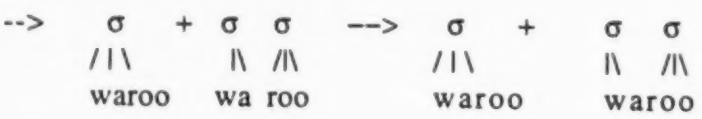
In the remainder of this section I look at both the account of Hausa nominal reduplication that involves a prefixation process as well as the one that involves infixation. I show that both of these approaches have difficulties in accounting for the data in (10) and (11) in a unified way. This suggests the superiority of the suffixal foot analysis presented in the previous section.

Consider first the prefixation analysis for the derivation of **wárwáróo**, and **bàakúnkúnàa** within McCarthy and Prince's type framework as shown below.

(14) a-Base b- Prefixation c- Phoneme copying



d- Association e- Coda rule



f- Stray Erasure

```
 σ   +    σ  σ
/|\       |\  /|\
war       waroo      =    [warwaroo]
```

(15) a-Base b-Prefixation

```
                    F
                   /\
 σ  σ  σ   --    σ σ + σ  σ  σ
/|\  |\ /|\           /|\  |\ /|\
baakunaa            baakunaa
```

c-phoneme copying

```
     F
    / \
    σ σ +        σ σ  σ
                /|\  |\ /|\
    baakunaa  baakunaa
```

d-Association

```
     F
    /\
    σ   σ   +  σ  σ  σ
    /|\ /|\    /|\ |\ /|\
    baa kunaa  baa kunaa
```

e-Stray Erasure

```
     F
    / \
    σ   σ   +  σ σ  σ
    /|\ /|\    /|\ |\ /|\
    baakun     baaku naa   =   *baakunbaakunaa
```

As shown in (14) and (15) the foot prefixation approach does not operate in a unified manner. While postulating a syllable in (14) as the reduplicative template for deriving

wárwáróo leads to the right output, its yields the wrong result when applied to **bàakúnkúnàa** since the initial syllable does not reduplicate in this form. A prefix syllable also results in the wrong output within McCarthy and Prince's theory as demonstrated in (16).

(16) a-Base b-Prefixation

```
 σ σ σ  --  σ + σ σ σ
/|\ |\ /|\        /|\ |\ /|\
baa kunaa         baakunaa
```

c-phoneme copying

```
 σ  +   σ σ  σ
/|\      /|\ |\ /|\
baakunaa baakunaa
```

d-Association

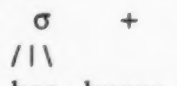
```
 σ   +  σ σ  σ
/|\     /|\ |\  /|\
baakunaa baakunaa
```

e-Stray Erasure

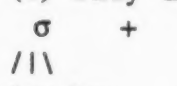
```
 σ   +  σ σ  σ
/|\     /|\ |\  /|\
baak    baaku naa  =  *baakbaakunaa
```

Let now look at how an infixation account of Hausa nominal reduplication works within McCarthy and Prince's theory of prosodic morphology. Examples (17) and (18) briefly illustrate the result of infixation application to nominal such as **báakúnàa** and **wárwáróo**.

(17) (a)



(b) Stray Erasure



= bàakúnkúnàa

(c) Nasal Assimilation: [baakunkunaa]

(18) (a)

(b) Stray Erasure

= *warroo

In (17) and (18) I assume that the reduplicative affix is a syllable which is prefixed to the base with the initial syllable of the base marked extrametrical (expressed by the symbol <>). Association then takes place in a left-to-right fashion. As can be seen in (17) the result of the association yields the right output [bàakúnkúnàa], whereas it produces the wrong output in (18). Thus, infixation does not provide a unified analysis for the data in (10) and (11).

To sum up, I have shown that the two kinds of words -- reduplicated nouns in (10) and the class 2 plurals in (11) -- are problematic for both prefixation and infixation account within McCarthy and Prince's theory of reduplication. Thus, by comparison to my proposal the prefixation and infixation analyses offer a less straightforward account of nominal reduplication process in Hausa. Thus, only the analysis where reduplication is viewed as the suffixing of a bisyllabic foot template can handle the data in (10) and (11) in a unified manner. In the following section, I look at how a CV-template approach along Marantz's line as exemplified by Davis (1988) would account for the reduplication pattern in (11).

4. A CV Account of Hausa Nominal Reduplication

Davis (1988) adopts Marantz's segmental approach to reduplication to account for the reduplication pattern shown in Hausa class 2 plurals presented in (11). He argues that the reduplication process involves the insertion of a VCC interfix before the stem-final vowel and shows how below how the derivation operates within CV-skeletal approach to result in the right output. This section I want to show how Davis' analysis which does not include the data in (10) would have to account for the reduplication pattern shown in this set of data.

In order for Davis to account for the data in (10) his analysis would have to stipulate that the reduplicative infix is a **-CVC-** sequence rather than a **-VCC-** sequence as suggested for (10) which is inserted before the stem final vowel. Thus the CV-template approach would yield the following derivation for **wárwáróo**, as shown below.

(19) (a)

```
war o
| | | Λ  -->
 cvcvv
```

(b)

```
war      o
| | |    Λ  -->
cvc + cvc + vv
```

(c)

```
war      o
| | |    Λ
cvc + cvc + vv
     waro
```

(d)

```
war      o
| | |    Λ
cvc + c vc + vv
     | | |
     waro
```

(e)

```
war      o
| | |    Λ
cvc + c vc + vv
     | | |
     war
```

(f) [warwaroo]

Notice if a -VCC- sequence is assumed to be the reduplicative affix instead of a -CVC- sequence, the derivation would result in the wrong output as shown below:

(20) (a)

```
war o
|||Λ
cvcvv
```

-->

(b)

```
war      o
| ||     Λ
cvc + vcc + vv
```

-->

(c)

```
war      o
| ||     Λ
cvc + vcc + vv
      waro
```

(d)

```
war      o
| ||     Λ
cvc +  vcc + vv
         ||
       waro
```

(e)

```
war      o
| ||     Λ
cvc +  vcc + vv
         ||
       war
```

(f) *[wararroo]

To sum up, I have just shown that a CV-template analysis along the lines of Davis (1988) fails to provide a unified account of the reduplication process involved in the data (10) and (11). Thus, I conclude that the analysis of the Hausa nominal reduplication I propose in this paper involving the suffixing of a bisyllabic foot on the stem is more adequate than Davis' CV account.

5. Other Evidence in Hausa for a Foot Template: Nickname Formation

The question arises as to whether there are other aspects of Hausa morphology that make use of a bisyllabic foot template or whether the use of a bisyllabic foot is peculiar to reduplication and not motivated elsewhere in the language. In this section I want to elaborate another process besides reduplication within the Hausa language which invokes foot as a prosodic template.

McCarthy and Prince (1986) argue that truncation, a process involving the reduction of word size under some morphological conditions, provide supporting evidence for templatic morphology. According to McCarthy and Prince the output of truncation in many languages favors foot creation. They

demonstrate that nickname formation or language games involving truncation usually invoke a foot template. The data in (21) from a Japanese secret language taken from McCarthy and Prince (1986: 259) illustrate a process (often, but not always involving truncation) where the target length of the secret language word is two bimoraic feet (four moras).

(21)

Base Form	Secret Form	
maneezyan	zyaamane	'manager'
koohii	hiikoo	'coffee'
ippatu	patuiti	'a shot'
hi	iihii	'fire'

What the data in (21) show is that the Japanese secret language game words conform to a template consisting of two bimoraic feet. As can be seen in (20) the base forms that are more that two bimoraic feet long undergo truncation to satisfy the target template. A base form which is already two bimoraic feet, such as **koohii** undergoes neither lengthening nor truncation since it has already the shape of the template. But syllable inversion rule applies to **koohii** to derive **hiikoo**. A bimoraic word such as **hii** is lengthened by one more syllable to satisfy the target template to derive **iihii**. For **ippatu** the application of the reversal rule for deriving the nickname results in exchange of consonant length. Thus, the /t/ takes the gemination feature of /p/.

Further evidence in favor of the template-base morphology and also for the role of the foot in Japanese is provided by hypocoristic (nickname) formation which has been discussed in McCarthy and Prince (1986), but more clearly in Poser's (1990) article.

Poser (1990) observes that in Japanese hypocoristic formation involves adjoining the hypocoristic suffix /-tyan/ to a base form which is in the most common cases subject to a

two-mora constraint. Furthermore, Poser argues that a non bimoraic base form must undergo multiple modifications such as truncation or lengthening in order to satisfy the two-mora constraint. The sets of data taken from Poser (1990) illustrate his observations.

(22) Truncation in mid-morpheme or mid-syllable

akityan	<	akira
arityan	<	arisa (from English Alicia)
megutyan	<	megumi
wasatyan	<	wa + sabu + roo
tarotyan	<	taroo
zirotyan	<	ziroo

(23) First bimoraic syllable (CVV; CV_1V_2; CVN)

aatyan	<	aasa (a)
syuutyan	<	syuusuke
keityan	<	keiko, keizi
taityan	<	taizoo, taisen
zyuntyan	<	zyunko, zyun
kintyan	<	kinsuke

While the data in (22) show that modification of the base form involves truncation of the base form to the initial two mora of the base to produce exactly two mora, the data in (23) show that then the base initial syllable is bimoraic truncation may apply up to that initial bimoraic syllable. In (24) below it is shown that monomoraic base forms or (C)VCVX base form undergo lengthening in order to satisfy the two-mora constraint.

(24)

tiiyan	<	ti
hiityan	<	hiroko
iityan	<	izumi

(25)

attyan	<	atuko
kattyan	<	katuko
antyan	<	ani

neetyan	<	ane	tittyan	<	ti
niityan	<	ani			
miityan	<	mieko			

In (25) Poser observes that the /t/ of the onset of the hypocoristic suffix is geminated to form the second mora of the preceding syllable of the base which is initially monomoraic. Poser also added that longer names in Japanese also conform to the two-mora constraint since their structure is generally modified to two feet (or four mora) as shown by the data below.

(26)	*wasabutyan	<	wasaburoo
	*gisabutyan	<	gisaburoo

Finally, Poser notes that monomoraic stems or stem forms that are more than bimoraic (or four mora) long cannot constitute a base form for hypocoristic formation.

(27)	*yotyan	<	yoosuke
	*ketyan	<	keezi
	*gityan	<	gisaburoo
	*watyan	<	wasaburoo

On the basis of the above data Poser (1990) argues that the modification process involved in hypocoristic formation in Japanese can best be accounted for by invoking a bimoraic foot template. Thus, nickname formation (and also several other morphological processes described in the same article) provides additional evidence in favor of template-based morphology and the role of foot in Japanese.

In Hausa there is a way of creating nicknames in which the nickname form must be two syllables long or one foot. This

means that for names of more than two syllables the nickname formation process involves truncation, and for names of one syllable the process involves lengthening. Consider, first, the proper names in (28) which all contain more than two syllables.

(28) Proper Name	Nickname
?àlkáasùm	?àlkáa, káasùm
Mùstáfàa	Mùttáa, ?àttáa
Hússèináa	Húusèi, Húusèe
?ìibàràhímàa	?íibùu, Búràa, ?ìiróo
Hàbíibátàa	Hàbíi, Bíibàa
Zèináabùu	Zéinàb, ?áabùu, Zéinoo, Zéinàa
Bàtúurìyáa	Túurái
Dòomìníikìi (Dominique)	Níikìi
Bìkìitár (Victor)	Bíkìi / V̲íkìi

The nickname forms of these above proper names all consist of two syllables or one foot. In addition, the shape of the nicknames exhibit some phonotactic constraints that are proper to the Hausa language in general. in general, a heavy syllable constitutes the last syllable of a nominal in Hausa. The above nicknames also satisfy this requirement by putting a heaviness constraint on its second syllable while there is no constraint on the first syllable. This represents evidence for a bisyllabic foot as the template in nickname formation.

Furthermore, if a bisyllabic foot is the target template for Hausa nicknames, then two predictions can be made regarding the derivation of nicknames from monosyllabic and bisyllabic proper names. The first prediction is that in order to derive a nickname from a monosyllabic proper name, the shape of the proper name must be lengthened by one more syllable. The second prediction is that there would not be any reduction or augmentation of syllable for deriving nicknames from

bisyllabic proper names. Monosyllabic and bisyllabic names in Hausa provide strong evidence for these two predictions as shown by the data in (29) and (30).

(29) Proper names	Nicknames
Bân (Ben)	Béenúu
Mâa (mother)	Máamáa

(29) shows lengthening of monosyllabic bases. Moreover, when the base consists of a single CVC syllable, as in *Bân*, a long vowel is added to the base to derive the nickname.

(30) (a)	
Míicál (Michel)	Míishùu
Míicál (Michele)	Míimìi
Dàanyál (Daniel)	Dàaníi
Jìizál (Gisele)	Jíizùu
(b)	
Múusáa	Kàllám, Kàlláa
(c)	
Sáaníi	---
Bárkèe	---
Gwòmmáa	---
Yéeràa (Gerard)	---

In (29) a heavy syllable --CVC -- constitutes the shape of the monosyllabic names. Nicknames formation from this set of names proceeds by long vowel suffixation to the final consonant of the name to create a bisyllabic structure. As for the bisyllabic names in (30a-c), the bisyllabic names undergo slight phonological changes to derive the bisyllabic nicknames. There is no syllable augmentation. In (30b) a bisyllabic nickname is derived from a completely different root from that

of the proper name. Finally in (30c) the disyllabic proper names do not have any nicknames.

To sum up, I have presented evidence that nickname formation in Hausa invokes a disyllabic foot as a prosodic template. The exact same template is required to account for Hausa suffixing reduplication. Hausa nickname formation thus provides independent evidence for the use of a bisyllabic template in Hausa morphology.

6. Conclusion

Summarizing, I have undertaken an analysis of Hausa nominal reduplication within McCarthy and Prince's (1986, 1988 and 1990) framework. I have demonstrated in section 3 that my analysis involving a bisyllabic foot template provides an adequate and even a superior account to partial nominal reduplication in Hausa than a CV-template approach. While in my analysis both patterns of reduplication described for the two sets of data in (10) and (11) are accounted for in a uniform way, both prefixation or infixation approaches in either a CV-template framework or in McCarthy and Prince's theory would have to postulate two kinds of analyses in order to account for the two kinds of words. Furthermore, I showed that Hausa nickname formation processes provide strong supporting evidence for the role of foot structure in Hausa and for McCarthy and Prince's theory of Prosodic morphology in general.

NOTES

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